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Federico Innerebner

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EXAMINER

SANDERS, JANIS C

ART UNIT

PAPER NUMBER

1732

MAIL DATE

DELIVERY MODE

06/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/798,350

Applicant(s)

INNEREBNER ET AL.

Examiner

Janis Sanders

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 and 40-42 is/are pending in the application.
- 4a) Of the above claim(s) 19,24 and 26-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18,20-23,25,29-34 and 40-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment to claims in the reply filed on 2/14/2007 is acknowledged. Claims 1,7,8,17,18,22,25,29-34 and 42 have been amended and claims 19,24 and 26-28 have been cancelled. Claims 1-18,20-23,25 and 29-42 pending in the application.

New Rejections

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Güntherberg.

Regarding claim 1, Güntherberg et al. (US 6,165,399) discloses a process for producing thermoplastics comprising metering at least one elastomer component A to a mixing extruder (column 4, lines 10-17 and column 4, lines 52-62) and mixing and plasticizing the elastomer as the elastomer passes through the extruder (column 6, lines 45-52 and Figure 1). The reference teaches that the elastomer is a moist solid containing

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up to about 60% by weight residual water (first fluid medium) (column 6, lines 60-67). It is the position of the examiner that, given the preparation steps detailed by the reference and the description in columns 6-7 and the Examples, the elastomer is present in a uniformly distributed form in the first fluid medium. The reference details that an additive D, which may be a reinforcing agent, may be added in a second liquid medium to the elastomer (column 21, lines 1-15 and column 8, lines 54-60) and that additional fillers, i.e. component B, are added in several incorporation steps (column 9, lines 15-25, column 21, lines 15-25, and Figure 1). The first and/or second liquid medium are removed in several dewatering steps (column 7, lines 1-10, column 11, lines 40-50, Figure 1, zones 3, 3', 6, and/or 6'). With reference to Figure 1, the incorporation steps and dewatering steps alternate in succession.

Regarding claims 2 and 3, the elastomer is in the form of an emulsion (column 4, lines 65-67 and the examples).

Regarding claim 6, the extruder is a multi-screw extruder having screws that rotate in the same direction (column 4, lines 10-15 and column 4, lines 53-63).

Regarding claims 7 and 8, the reinforcing material (additive D) is fed into the metering sections of the extruder, separately from the elastomer (component A) or together with the elastomer (column 5, lines 35-45).

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Regarding claim 9, the reinforcing material is added to the elastomer as a suspension in a second fluid medium (column 21, lines 5-15 and column 8, lines 55-60).

Regarding claims 17-18, additional components, i.e. component C (considered to be an "additive"), are at least partially charged in the mixing extruder (see Figure 1).

Regarding claim 20, cross-linking agents are not required (col. 1, lines 5-21).

Regarding claims 22 and 29, additional (D) components are mixed in the extruder with the elastomer. Dewatering of component A is preceded by further component feeding and water removal steps (abstract).

Regarding claim 31, rubbers are frequently used as elastomer components. Such rubbers are usually prepared in aqueous systems, by emulsion or suspension polymerization (for example by adding a coagulating precipitating agent) (col. 1, lines 29-36).

Regarding claim 32, the present invention furthermore relates to molding materials prepared by the process (col. 1, lines 22-23).

Regarding claim 40, the elastomer mixture is a compound comprising components A through D (abstract).

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Regarding claims 41 and 42, containing 20% by weight of carbon black (soot) and 80% by weight of the styrene/acrylonitrile copolymer of component B (col. 30, lines 45-47).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 23 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg et al. (US 6,165,399) in view of Sturm et al (WO 02/30652). Please note that the citations in the following discussion are referenced to the English translation version of Sturm et al (WO 02/30652), U.S. Patent Application Publication 2004/0094862.

Güntherberg teaches the method of claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

Güntherberg does not teach of degassing as required in claim 23. The reference further does not teach crosslinking in the extruder, as required by claim 34.

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Sturm teaches that degasification takes place in the extruder, as required by claim

23. See paragraph [0058].

Sturm teaches cross-linking in the extruder, as required by claim 34. See paragraph [0029].

Güntherberg and Sturm are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Güntherberg, degassing and crosslinking, as taught by Sturm, and would have been motivated to do so to improve multiple component mixing and/or processing.

6. Claims 21 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg et al., in view of Handa et al (U.S. Patent 5,158,725).

Güntherberg teaches the method of claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

Güntherberg does not teach of operating at a vulcanizing temperature or using a granulated elastomer mixture, as required by claims 21 and 33.

Handa teaches operating below the cure (vulcanizing) temperature of the material, as required by claim 21. See lines 24-27 in column 3.

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Handa teaches pelletizing the compounded elastomer, as required by claim 33, at lines 8-11 in column 6.

Güntherberg in view of Handa are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Güntherberg, an operating temperature and elastomeric granulation, as taught by Handa, and would have been motivated to do so to optimize the plastification process of the extruder.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 above, in view of Neubauer et al (U.S. Patent 6,200,509).

Güntherberg teaches the method of claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

Güntherberg does not teach the elastomer present in a suspension, as required by claim 4.

Neubauer et al. teaches a polymer (elastomer) obtained in a suspension process at lines 55-60 in column 4.

Güntherberg in view of Neubauer are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Güntherberg, the suspension configuration, as taught by Neubauer, and would have been motivated to do so to expand the range of materials available to the process.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 above, and further in view of Hall et al (U.S. Patent 5,501,804).

Güntherberg teaches the method of claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

Güntherberg does not teach the elastomer present as a gel-like compound, as required by claim 5.

Hall et al. teaches an elastomer gel composition at lines 6-24 in column 1.

Güntherberg in view of Hall are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials. One of ordinary skill in

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the art at the time of the invention would have found it obvious to include in the method of Güntherberg, the gel configuration, as taught by Hall, and would have been motivated to do so to expand the range of materials available to the process.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 above, in view of Takahaski et al (U.S. Patent 4,927,587).

Güntherberg teaches the method of claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

Güntherberg does not teach the filler present as a suspension, as required by claim 9. Güntherberg further does not teach the filler as a premix prepared by wet milling, as required by claim 10.

Takahaski teaches wet milled silica as a component to a silicone rubber composition for extrusion molding at lines 50-60 in column 3. The silica constitutes a filler (reinforcing material). The milling would have been a prior process. The milled silica would be in particulate form and, therefore, present as a suspension.

Güntherberg in view of Takahaski are combinable because they are both concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it

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obvious to include in the method of Güntherberg, the filler preparation, as taught by Takahashi, and would have been motivated to do so to gain uniform dispersion of the filler.

10. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 above, in view of Takahaski, and in further view of Semmekrot (U.S. Patent 5,158,784).

Güntherberg in view of Takahaski teach the method of claims 1-3, 6-10, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

Güntherberg in view of Takahaski do not teach milling in a shearing field between two coaxial rotating elements, as required by claim 11, or wherein the rotating elements are cones with an expandable gap, as required by claim 12. Güntherberg in view of Takahaski further do not teach that one of the rotating elements is a rotor and the other is a stator, as required by claim 13. Güntherberg in view of Takahaski still further do not teach pin-like elevations in the gap, as required by claim 14.

Semmeckrot teaches a mixing (milling) device having a stator and a rotor in coaxial configuration at lines 8-15 in column 2.

The rotor is identified by reference character 6 and the stator by reference character 4 in Fig's 1, 2, and 3. Fig. 3 shows a conical form to the rotor at the distal end

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and a complementary form to the stator. Fig. 3 also shows an expandable/reducible gap between the conical features, which is actuated by a piston rod at reference character 12. See lines 35-40 and 52-56 in column 3.

Semmekrot teaches a pin mixer where the pins are arranged in axial planes over the interior surface of a stator. This is shown at lines 43-57 in column 1.

Güntherberg, Takahaski and Semmekrot are combinable because they are concerned with a similar technical field, namely, processing viscous materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Güntherberg and Takahaski, the mixing technique, as taught by Semmekrot, and would have been motivated to do so for good distributive mixing action.

11. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg, as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 above, in view of Takahaski and Semmekrot, and in further view of Gamblin (U.S. Patent 5,029,760).

Güntherberg, Takahaski and Semmekrot teach the method of claims 1-3, 6-14, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

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Güntherberg, Takahaski and Semmekrot do not teach collision elements interacting with a surface, as required by claim 15, and do not teach a centrifugal mill, as required by claim 16.

Gamblin teaches a ball (collision elements) mill at lines 35-50 in column 1. Gamblin further teaches a centrifugal mill at lines 20-25 in column 3.

Güntherberg, Takahaski, Semmekrot and Gamblin are combinable because they are concerned with a similar technical field, namely, processing powders. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Güntherberg, Takahaski and Semmekrot the grinding technique, as taught by Gamblin, and would have been motivated to do so to optimize grinding action.

12. Claims 9, 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Güntherberg as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 above, and further in view of Andersen et al (U.S. Patent 5,151,026).

Güntherberg teaches the method of claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, as discussed above.

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Güntherberg does not teach dewatering before charging a vulcanizing agent, as required by claim 25. The reference further does not teach of a lateral extruder along the mixing extruder as required by claim 30.

Andersen et al, teaches a method of removing liquid from non-liquid material in an extruder, the non-liquid material including elastomers and other particulate or comminuted substances such as wood or cone pulp (reinforcing material). This is shown at lines 4-14 in column 3. The particulate or comminuted substances would be present as a suspension.

Andersen teaches that water removal is necessary because the water absorbs the heat generated by the work processes in the extruder making them less efficient. This is shown at lines 65-68 in column 1 and 1-5 in column 2. Given the heat-sink effect of water, it would have been obvious to one of ordinary skill to control an exothermic reaction like vulcanizing by removing the water beforehand.

Further in addition, Andersen teaches a second extruder transverse to the first extruder functioning as a "drag flow force" which effectively compresses the material while dewatering, as required by claim 30.

Güntherberg in view of Andersen are combinable because they are concerned with a similar technical field, namely, processing elastomeric materials in an extruder. One of ordinary skill in the art at the time of the invention would have found it obvious to

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include in the method of Güntherberg, the dewatering and 2nd extruder step, as taught by Andersen, and would have been motivated to do so to render the product in dry form for convenient processing.

Response to Arguments

13. Applicant's arguments with respect to claims 1-18,20-23,25,29-34 and 40-42 have been considered but are moot in view of the new ground(s) of rejection.

Remarks

14. No claim is allowed.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis Sanders whose telephone number is 571-272-7145. The examiner can normally be reached on M-Th and alternating Fridays 7:30-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 1732

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